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10/727,467	12/04/2003	Joerg Ulrich Fontius	P03,0554	7491

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EXAMINER	
RAHMJOO, MANUCHER	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/727,467	FONTIUS, JOERG ULRICH	
	Examiner	Art Unit	
	MIKE RAHMJOO	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *9/8/08*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *48-63* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *48-63* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 48- 63 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As per claim 48 applicant recites "...a volumetric 3D monitor which **shows** the 3D volumetric visualization image of said three-dimensional data set not on a solid surface but in 3D space surrounded by an associated surface or surfaces outwardly spaced from said 3D volumetric 3D space visualization image on which a reference point is definable with respect to said 3D visualization image **shown** by the monitor...".

Paragraph [0057] of the specification teaches "FIG. 1 shows a display device 1 to display a visualization of three-dimensional data sets. The data sets are acquired with the aid of a magnetic resonance tomography device 3 representative of imaging medical devices. The (in this case, three-dimensional) acquired head 5 of a patient is **shown** with the aid of a 3D monitor 7. The SD monitor 7 is, in this case, a real 3D monitor that displays a subject (here the head 5) within its spatial display volume or

region 8 as a spatial image (here a head image 9). Alternatively, the 3D monitor 7 could also be a conventional monitor, meaning a monitor with a two-dimensional display space that images the head using a spatial perspective".

As per telephonic interview dated 9/3/2008, applicant explained the 3D space surrounded by an associated surface or surfaces outwardly spaced form said 3D volumetric 3D space visualization image by making a reference to fig. 1 and the 3D monitor 7 which shows said monitor as outwardly spaced and therefore the rejection was dropped. However, upon further consideration the highlighted portions of the claim (i.e., shows and shown) is simply stated the same way as claimed without further explanation of how said feature of generation of the 3D head is made possible on said medium (i.e., monitor 7). In other words, the volumetric 3D monitor showing the 3D visualization image of said three dimensional data set not on a solid surface but in 3D space is not taught throughout the entire specification. "A selection to select said reference point ...on the volumetric 3D monitor" and "a direction unit to specify the direction to specify a direction...on the volumetric 3D monitor" are also simply stated the same way as claimed without further explanation of how said feature of selecting a reference point and or specifying a direction is made possible on said medium (i.e., monitor 7). On the other hand, as an alternative feature said 3D monitor is described as "a conventional monitor" being equivalent of a two dimensional display in the same paragraph which is neither claimed nor what applicant discussed in duration of the interview. As a result in view of a void in the teaching of the specification and in light of the foregoing explanation examiner fails to see how make/ and or use the claimed

invention because the claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 48- 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cosman (US Patent 6006126) in view Neff et al (US PAP 2002/ 0180728), hereinafter, Neff and further in view of of Nissen (US PAP 2003/ 0001869).

As per claim 48, in light of the rejection made and as to the best understanding of examiner, Cosman teaches a volumetric 3D monitor which shows the 3D volumetric visualization image of said three dimensional data (i.e., computer graphic workstation display of column 25 line 40) set not on a solid surface but in 3D space (i.e., fig. 8- 10 and 16 and the *three dimensional representation of image scan data*. Col. 25 line 39 also teaches display of *3D volumetric views on computer graphic workstation display. Examiner reads said representation as corresponding to visualization*) surrounded by an associated surface or surfaces (i.e., boney anatomy of fig. 16) on which a reference point (i.e., points 1040 1041 1044 and 1046 of fig, 16) is definable with respect to said

3D visualization shown by the monitor (i.e., 3D volumetric visualization views on computer graphic workstation display in col. 25 line 40);

Cosman implicitly teaches a selection unit (corresponding to the probe in column 12 line 42) to select a reference point (corresponding to the points 769 and 779 of the brain) on the surface or surfaces relative to the 3D volumetric visualization image on the 3D monitor (corresponding to the graphic display of points 769 and 779 relative t the three dimensional image anatomy in column 12 lines 45- 47) of the three dimensional data set selected by the user;

a direction unit (corresponding to the probe in column 12 line 42) to specify a direction (corresponding to the vertical or horizontal direction relative to the brain in 3D coordinates) from said reference point (the end of the probe as point 709 representative of the depth of the brain) to said point being selected by the user (corresponding to points 769 and 779) in the 3D volumetric visualization image (corresponding to the 3D image anatomy) on the volumetric 3D monitor (corresponding to display 760 and 770) see for example fig. 7 and column 12 and lines 40- 48;

a distance unit to set a distance value (corresponding to the probe in column 12 line 42 to determine quantitative position of the probe (i.e., depth as indicated by the end of the probe) and any point on the probe relative to image data points 769 and 779) from said reference point along said direction (corresponding to the vertical or horizontal direction relative to the brain in 3d coordinates) to said point being selected in the visualization image.(corresponding to the 3D image anatomy) see for example fig. 7 and column 12 and lines 40- 48.

As per figure 16 and upon movement of the probe in space near the physical patient's anatomy, the position of said probe (i.e., selection, direction and distance unit) may be related to the image scan data of the patient's anatomy, and therefore, its position (i.e., direction) may be displayed (i.e., corresponding to display on the volumetric 3D monitor) relative to the image scan data of said patient's anatomy which is displayed in slices or three-dimensional volumetric views on a computer graphic workstation display, and the position (i.e., coordinate) of the space probe may be related to these views.

However, Cosman does not explicitly teach the 3D volumetric visualization image in 3d space surrounded by associated surface or surfaces outwardly spaced form said 3D volumetric 3D space visualization image on which a reference point is definable with respect to said 3D visualization image.

Neff teaches teach a volumetric 3D monitor (fig. 1- 3 and the 3D hybrid screen) which shows the 3D volumetric (i.e., 3D seismic data) visualization image surrounded by associated surface or surfaces spaced form said 3D volumetric 3D space visualization image (i.e., flat wall, a wraparound, or various combinations of flat walls, with or without a floor or a dome shaped ceiling in [0069]). Fig. 8- 10 and [0069] teach the flow chart of importing 3D data (i.e., points) which to be visualized to provide the 3D seismic data volume which utilizes said 3D hybrid screen (I.e., volumetric 3D monitor).

It would have been made obvious to one of ordinary skilled in the art at the time the invention was made to incorporate the teachings of Neff into Cosman to facilitate

viewing on four commonly used screen types including: a flat wall, multiple adjacent flat walls, a concave semidome, and a semi-cylindrical wraparound screen which are combined into a single screen referred to herein as a "hybrid" screen therefore use multiple projectors to project adjoining images on adjacent sections of a large wraparound screen so that observers can view objects with depth perception in 3D space see for example [0022] and [0007].

Cosman does not explicitly teach a distance unit to set a distance value from said reference point along said direction to said point being selected in the visualization.

Nissen teaches a distance unit (i.e., image window tool of fig. 1) to set a distance value from said reference point along said direction to said point being selected in the visualization image(corresponding to for example determination of distance and direction from the reference point from the sensor point of which an input is read) see for example [0016].

It would have been made obvious to one of ordinary skilled in the art at the time the invention was made to incorporate the teachings of Nissen into modified device of Cosman so as to provide the reference points being visualized on the screen so that the user can visually see which point is being used for calculation of the resizing, therefore when one corner of the screen defines the reference point and as the user touches the screen in order to resize the object, the distance and direction between the touch point and this reference point is calculated for resizing and visualizing the resized object which adds to the efficiency and marketability of the device see for example [0020- 25].

As per claim 49 Cosman teaches said surface or surfaces (i.e., 3D volumetric views) is virtual corresponding to for example col. s5 line 40.

As per claim 50 Cosman teaches the selection unit comprises a positioning unit to position the reference point on the surface or surfaces(corresponding to points 834,836,838,840) and a sensor (detectors 800 and 798), the sensor registering a position of the reference point on the surface or surfaces corresponding to for example fig. 9A wherein the detector system tracks the position of the probe and the probe tip and has a basis of data, e.g. "knows," when the probe touches these points.

As per claim 51 Cosman teaches wherein the selection unit comprises a mouse, and a movement of the mouse (corresponding to the use of a mouse) registered by the mouse corresponding to a movement of the reference point on the surface or surfaces corresponding to for example col. 17 lines 60- 65.

As per claim 52 Cosman teaches wherein the direction unit comprises a level tiltable (joystick and the tiltable level) in a direction and a sensor, the sensor registering a tilting of the level in the direction corresponding to for example col. 17 lines 60- 65.

As per claim 53 Cosman teaches wherein the direction unit comprises a joystick tiltable in two directions(joystick with inherent tilting) , tilting of the joystick unambiguously specifying two angles for direction specification corresponding to for example col. 17 lines 60- 65.

As per claim 55 Cosman teaches wherein the selection unit and the direction unit comprise a pointer wand whose position and orientation specify

at least one of the reference point and the direction with respect to the visualization corresponding to for example col. 15 lines 60- 67 wherein the probe (unit 808) has a tip or position or virtual tip 814 which may touch off a point of an arbitrary nature 834 (corresponding to reference point).

As per claim 56 Cosman teaches wherein at least one of the position and orientation of the pointer wand is measurable by means of ultrasonic elapsed-time measurements corresponding to for example. Col. 26 lines 35- 40 wherein the ultrasonic probe may send out the ultransonic signal, may receive the reflected ultransonic signal and determine a time delay between sending and receiving so as to determine the distance,

Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over the modified device of Cosman further in view of Taft (US Patent 6169537).

As per claim 54 the modified device of Cosman does not teaches the joystick Is structurally connected with a mouse.

However, Taft teaches the joystick Is structurally connected with a mouse corresponding to for example fig. 2a units 12 (joystick movable in XY directions) and 30 (conventional mouse).

It would have been made obvious to one of ordinary skilled in the art at the time the invention was made to incorporate the teachings Taft into Cosman to have a mouse assembled into joystick to partially overcome particular concern the awkward and unnatural hand position required to hold and control a computer mouse and

therefore avoid great discomfort if a mouse is used for hours at a time and in extreme instances, serious hand and/or wrist injury, such as the infamous and debilitating carpel tunnel syndrome see col. 1 lines 30 – 40.

Claims 57- 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified device of Cosman further in view of Sekiguchi et al (US PAP 2002/ 060665).

As per claim 57 Cosman does not teach at least two ultrasonic transmitters, and the input system additionally comprises a receiving unit to receive ultrasonic signals and a synchronization unit to synchronize the ultrasonic transmitters and the receiving unit.

Sekiguchi teaches at least two ultrasonic transmitters, and the input system additionally comprises a receiving unit to receive ultrasonic signals and a synchronization unit (see for example claim 9 for the synchronization unit) to synchronize the ultrasonic transmitters and the receiving unit corresponding to for example [0144] wherein two ultrasonic transmitters may be attached to the receiving unit.

It would have been made obvious to one of ordinary skilled in the art at the time the invention was made to incorporate the teachings of Sekiguchi into Cosman to provid a coordinate input apparatus capable of making a coordinate input from a plurality of input planes and when the line connecting the two ultrasonic receivers is perpendicular to the input plane, the distances from the input device in the input plane

to the two ultrasonic receivers exist in a plurality of sets and therefore the sufficiently practicable coordinate input device can be provided for precision and efficiency of the device see [0012].

As per claim 58 Sekiguchi teaches wherein the synchronization unit is connected by a radio connection with the ultrasonic transmitters of the pointer wand corresponding to for example [0144].

As per claim 59 Sekiguchi teaches at least two ultrasonic reflectors (corresponding to R1,R2 receiving the ultrasonic transmitted from the input unit 4), and the input system additionally comprises an ultrasonic transmitter, a receiving unit to receive ultrasonic signals, and a synchronization unit to synchronize an ultrasonic transmitter and a receiving unit corresponding to for example [0056]. Cosman also teaches light source in forms of various sources as reflectors see the abstract.

As per claim 60 Sekiguchi teaches wherein the ultrasonic reflectors are designed such that they reflect an ultrasonic pulse with at least one of different strength and with characteristic pulse form, depending on a frequency of the ultrasonic pulse corresponding to for example fig. 7 and the ultrasonic pulse form.

As per claim 61 Sekiguchi broadly teaches wherein the distance unit comprises a rotatable small wheel (corresponding to unit 17) and a sensor to detect rotation corresponding to for example fig. 4a.

As per claim 62 Sekiguchi broadly teaches wherein the input system also

comprises a button to actuate a signal corresponding to for example personal computer 1 with on and off button.

As per claim 63 Sekiguchi an output unit to output a signal that comprises preferred information about at least one of the reference point, the direction and the distance value corresponding to for example claim 4 and the input and output coordinates or directions.

Response to Arguments

Applicant's arguments filed 9/8/08 have been fully considered but they are not persuasive. A new ground of rejection is made in light of new interpretation made by examiner.

As per telephonic interview dated 9/3/2008, applicant explained the 3D space surrounded by an associated surface or surfaces outwardly spaced form said 3D volumetric 3D space visualization image by making a reference to fig. 1 and the 3D monitor 7 which shows said monitor as outwardly spaced and therefore the rejection was dropped. However, upon further consideration the highlighted portions of the claim as per 35 USC 112 1st rejection (i.e., shows) is simply stated the same way as claimed without further explanation of how said feature of generation of the 3D head image is made possible on said medium (i.e., monitor 7). In other words, the volumetric 3D monitor showing the 3D visualization image of said three dimensional data set not on a

solid surface but in 3D space is not taught throughout the entire specification. "A selection to select said reference point ...on the volumetric 3D monitor" and "a direction unit to specify the direction to specify a direction...on the volumetric 3D monitor" are also simply stated the same way as claimed without further explanation of how said feature of selecting a reference point and or specifying a direction is made possible on said medium (i.e., monitor 7). On the other hand, as an alternative feature said 3D monitor is described as "a conventional monitor" being equivalent of a two dimensional display in the same paragraph which is neither claimed nor what applicant discussed in duration of the interview. As a result in view of a void in the teaching of the specification and in light of the foregoing explanation examiner fails to see how make/ and or use the claimed invention because the claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected.

The 3D visualization image as claimed as well as pointed out on page 9 of applicant's remarks is no more than the patient's head being scanned or head 9 of fig.1 which clearly corresponds to the patient's head of Cosman. The point selected on the patient's head (i.e., point 19) is a virtual slice plane surrounding said point as described in [0059] which is displayed on the 2D display 17 and not on a 3D monitor. Fig. 8a of Cosman shows the patient's head H (corresponding to head 9 of fig.1) represented by anatomy 780 (i.e., the head) is being scanned by an image scanner as well known in the art to *produce three dimensional data* that may be stored and viewed as slices or planes. FIG. 8b (as well as other figures pointed to throughout the rejection) indicates

a reconstruction of data representing the patient's anatomy 780 in quasi-three dimensions (clearly corresponding to the 3D volumetric visualization image of three dimensional data set) or in graphical form. Said 3D scanned data of Cosman is displayed on a 2D display (corresponding to 2D display 17 of fig.1). Fig. 12 of Cosman clearly teaches merging of the image scan data to the physical detection coordinate system via merging of physical points, anatomical points, reference points, surface features, lines or contours on the patient's anatomy to a representation or rendering or reconstruction of the images of the patient's anatomy from an image scanner

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Rahmjoo whose telephone number is 571-272-7789. The examiner can normally be reached on 8 AM- 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Rahmjoo

October 15, 2008

/Mike Rahmjoo/

Examiner, Art Unit 2624